

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

<b>SAINT LAWRENCE COMMUNICATIONS LLC,</b>	§	<b>Case No. 2:15-cv-00349-JRG</b>
	§	<b>(Lead Case)</b>
	§	
<b>Plaintiff,</b>	§	<b>JURY TRIAL DEMANDED</b>
	§	
<b>v.</b>	§	
	§	
<b>ZTE CORPORATION, ZTE USA, INC.,</b>	§	
<b>and ZTE (TX) INC.,</b>	§	
	§	
<b>Defendants.</b>	§	

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<b>SAINT LAWRENCE COMMUNICATIONS LLC,</b>	§	<b>Case No. 2:15-cv-00351-JRG</b>
	§	<b>(Consolidated Case)</b>
	§	
<b>Plaintiff,</b>	§	<b>JURY TRIAL DEMANDED</b>
	§	
<b>v.</b>	§	
	§	
<b>MOTOROLA MOBILITY LLC,</b>	§	
	§	
<b>Defendants.</b>	§	

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**PLAINTIFF SAINT LAWRENCE COMMUNICATIONS LLC'S**  
**OPENING CLAIM CONSTRUCTION BRIEF**

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## I. INTRODUCTION

The five asserted patents were all originally assigned to VoiceAge Corporation, a leading contributor to the Adaptive Multi-Rate Wideband (“AMR-WB”) audio coding standard. The AMR-WB standard is implemented worldwide in mobile devices manufactured by companies such as Samsung, Sony, Huawei, HTC, Motorola, LG and ZTE. All five patents have been declared essential to the AMR-WB standard, and many of the claim terms proposed by defendants for construction are incorporated *verbatim* into the AMR-WB standard’s technical specification. Because manufacturers and engineers rely upon the AMR-WB standard’s technical specification to properly implement the wideband coding standard, the claim terms at issue are well understood by those of ordinary skill in the art and need not be construed.

Despite the fact that the AMR-WB standard mirrors the claim language and that persons of ordinary skill in the art, including defendants’ engineers, readily understand—and routinely implement—these elements, defendants contend that 53 claim terms need to be construed by this Court. Unrestrained by the presumption of validity, defendants assert that 42 of those 53 terms are indefinite, including 36 terms that defendants contend are indefinite under 35 U.S.C. § 112(6) (“§ 112(6)”). Defendants’ suggestion that virtually every single means-plus-function claim term is indefinite unduly diminishes the efforts of the PTO in reviewing the claims prior to allowance. Moreover, because many of the same terms that defendants allege are indefinite are used verbatim in the AMR-WB standard, defendants cannot validly claim that a person skilled in the art would not be able to understand those terms with reasonable certainty. For the reasons explained below, defendants fail to show by “clear and convincing” evidence that the terms at issue are indefinite. *See Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 941 (Fed. Cir. 1990).

The remaining constructions proffered by defendants improperly import limitations that

are not found in the claim language, the specifications or the prosecution histories. This includes eight constructions where defendants have added the phrase “a specialized circuit” in an attempt to restrict the claim language to a specific form of implementation. The phrase “a specialized circuit” is not found in the intrinsic record, and as discussed below, the German courts have already rejected similar attempts to unduly narrow the scope of the patents.<sup>1</sup> In contrast, St. Lawrence’s proposed construction positions are consistent with the plain meaning of the terms at issue and the intrinsic record. St. Lawrence respectfully requests that the Court reject defendants’ constructions and adopt St. Lawrence’s claim construction positions.

## **II. OVERVIEW OF PATENTED TECHNOLOGY**

All of the asserted patents in this case relate to the transmission of wideband speech signals. The wideband speech signals are encoded at a transmitter and then transmitted to a receiver where they are decoded for the enjoyment of the listener. Generally, the asserted patents discuss techniques for more efficiently transmitting wideband speech signals. The invention disclosed in each of the asserted patents is discussed in further detail in St. Lawrence’s technical tutorial. *See also* Ogunfunmi Declaration (hereinafter “Decl.”) ¶¶ 14-16.

## **III. RELEVANT LEGAL STANDARDS**

In light of the number of terms that defendants have identified for construction, St. Lawrence respectfully directs the Court’s attention to St. Lawrence’s briefing in related Case No. 2:14-cv-1055 for an overview of the relevant legal standards. *See* Dkt. 82 at 2–4.

## **IV. AGREED CONSTRUCTIONS AND CURRENT POSITION**

The parties have not agreed on any construction, and 53 terms remain in dispute. To

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<sup>1</sup> German counterparts of the asserted patents have been held to be valid and infringed by manufacturers implementing the AMR-WB standard in Germany. *See* Ex. F, District Court Mannheim 2<sup>nd</sup> Civil Division, Mar. 10, 2015 (original and translation) (the “German decision”).

organize those 53 terms for the Court’s review, St. Lawrence has split the terms into two groups: the 36 terms that defendants allege are means-plus-function terms and the 17 remaining terms.

## **V. THE THIRTY-SIX ALLEGED MEANS-PLUS-FUNCTION TERMS**

Defendants contend that 36 terms are governed by 35 U.S.C. § 112(6) (“§ 112(6)”) and that *all* of those 36 terms are indefinite under § 112(6) for failure to disclose sufficient structure.

In order to assist the Court, St. Lawrence has grouped those 36 terms into Appendix 1 and Appendix 2 for quick reference. Appendix 1 lists the 21 “means for” terms that defendants allege are indefinite. As explained below, for each of those algorithm-based terms, sufficient structure is recited in either the corresponding patent specification or the claim language itself. In the latter case where the algorithm is included in the claim language itself, St. Lawrence respectfully submits that the terms fall outside of § 112(6). Appendix 2 lists the remaining 15 terms that do *not* use the phrase “means for.” For each of those terms, defendants fail to rebut the presumption that they are not means-plus-function terms under § 112(6).

### **A. The Twenty-One Terms in Appendix 1**

Defendants allege that each of the 21 terms in Appendix 1 is indefinite under § 112(6) for failure to disclose sufficient structure. Defendants are mistaken in all instances. Under § 112(6), a patentee may express a claim element as a “means or step for performing a specified function without the recital of structure, material, or acts in support thereof.” In such cases, the claim element “shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” 35 U.S.C. § 112(6).

In computer-implemented inventions, the Federal Circuit has required “that the structure disclosed in the specification be more than simply a general purpose computer or microprocessor.” *EON Corp. IP Holdings LLC v. AT&T Mobility LLC*, 785 F.3d 616, 621 (Fed. Cir. 2015). Instead,



the Federal Circuit requires “that the specification disclose an algorithm for performing the claimed function.” *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1312 (Fed. Cir. 2012); *see also EON Corp.*, 785 F.3d at 621 (“It is well-established that the corresponding structure for a function performed by a software algorithm is the algorithm itself.”). “Precedent and practice permit a patentee to express that procedural algorithm in any understandable terms including as a *mathematical formula*, in prose, or as a flow chart, *or in any other manner that provides sufficient structure.*” *Typhoon Touch Tech., Inc. v. Dell, Inc.*, 659 F.3d 1376, 1385 (Fed. Cir. 2011) (emphasis added); *see also Noah Sys.*, 675 F.3d at 1312 (same).

For each of the 21 terms that defendants allege is indefinite under § 112(6), the corresponding patent discloses sufficient structure in the form of a computer-implemented algorithm. Decl. ¶¶ 17-21. For each term, St. Lawrence has included the corresponding computer-implemented algorithm from the patents in Appendix 1 and provided a brief description below. To the extent defendants opt to reduce its list of terms and/or focus on particular allegations of indefiniteness, St. Lawrence will address the specifics of such arguments in its Reply Brief.

### 1. “means for calculating a periodicity factor”

Defendants allege that the term “means for calculating a periodicity factor in response to the pitch codevector and the innovative codevector” from the ’805 Patent is indefinite because the specification fails to disclose sufficient structure. However, the ’805 Patent discloses multiple methods for performing the recited function of “calculating a periodicity factor in response to the codevector and the innovative codevector.”

The ’805 Patent states that factors “ $\sigma$  or  $\alpha$  are *periodicity factors* derived from the level of periodicity of the excitation signal.” Ex. A at 14:37–38 (emphasis added). With respect to “periodicity factor  $\alpha$ ,” the ’805 Patent states that in a preferred embodiment, “[t]he periodicity

factor  $\alpha$  is computed in the voicing factor generator 204” and that “several methods can be used.” *Id.* at 14:40–41. Under the first method, the “factor  $\alpha$  is calculated in voicing factor generator 204 by  $\alpha = qR_p$  bounded by  $\alpha < q$  where  $q$  is a factor which controls the amount of enhancement ( $q$  is set to 0.25 in this preferred embodiment).” *Id.* at 15:1–6. Under the second method, the “factor  $\alpha$  is then computed in voicing factor generator 204 by  $\alpha = 0.125 (1 + r_v)$ .” *Id.* at 15:30–33.

Similarly, with respect to “periodicity factor  $\sigma$ ,” the ’805 Patent discloses algorithmic formulas for computing this second periodicity factor. For example, the ’805 Patent states that “the periodicity factor  $\sigma$  can be approximated by using  $\sigma = 2\alpha$  in methods 1 and 2 above.” *Id.* at 15:30–33. “In such a case, the periodicity factor  $\sigma$  is calculated as follows in method 1 above:  $\sigma = 2qR_p$  bounded by  $\sigma < 2q$ .” *Id.* at 15:39–42. Similarly, “[i]n method 2, the periodicity factor  $\sigma$  is calculated as follows:  $\sigma = 0.25 (1 + r_v)$ .” *Id.* at 15:43–45. Defendants cannot validly claim that the ’805 Patent fails to adequately disclose algorithms for computing a periodicity factor.

## 2. “means for calculating a factor representative of voicing”

Defendants also allege that the term “means for calculating a *factor representative of voicing* in the wideband signal in response to at least one second wideband signal encoding parameter of said set” from the ’123 Patent is indefinite. However, the ’123 Patent states that “[i]n a preferred embodiment *a voicing factor  $r_v$*  is computed in the voicing factor generator 204 using the following relation:  $r_v = (E_v - E_c) / (E_v + E_c)$ .” Ex. D at 15:33–37 (emphasis added).

## 3. “means for determining a distance measure”

Defendants allege that the term “means for determining a distance measure giving a similarity between adjacent, successive linear prediction filters computed during encoding of the wideband signal” is also indefinite. However, the ’123 Patent states that the “stability factor  $\theta$  is computed in a stability factor generator 230 *based on a distance measure* which gives the

similarity of the adjacent LP filters.” *Id.* at 15:62–64 (emphasis added). “In a preferred embodiment, the LP coefficients are quantized and interpolated in the Immitance Spectral Pair (ISP). It is therefore convenient to derive the distance measure in the ISP domain.” *Id.* at 15:65–16:1 (emphasis added). The ’123 Patent states that “[i]n a preferred embodiment, the ISP distance measure between the ISPs in the present frame  $n$  and the past frame  $n-1$  is calculated in stability factor generator 230 and is given by the relation:  $D_s = \sum_{i=1}^{p-1} (isp_i^{(n)} - isp_t^{(n-1)})^2$  where  $p$  is the order of the LP filter 206.” *Id.* at 16:6–15. Defendants cannot validly claim that the ’123 Patent fails to disclose an algorithm for determining the distance measure.

#### 4. “means for calculating a factor representative of stability”

Defendants allege that the term “means for calculating a *factor representative of stability* of said wideband signal in response to at least one third wideband signal encoding parameter of said set” is also indefinite. However, as discussed above, the ’123 Patent states that the “*stability factor  $\theta$*  is computed in a stability factor generator 230 based on a distance measure which gives the similarity of the adjacent LP filters.” *Id.* at 15:62–64 (emphasis added). The formula for calculating this stability factor is: “ $\theta = 1.25 - D_s / 400000.0$ .” *Id.* at 16:26. Defendants cannot claim that the ’123 Patent fails to disclose an algorithm for computing the stability factor.

#### 5. “means for calculating a smoothing gain based on said [voicing] and [stability] factors”

Defendants allege that the term “means for calculating a smoothing gain based on said first and second factors” is also indefinite. In the context of the claims, the first and second factors are the voicing factor  $rv$  and stability factor  $\theta$ , respectively. Each factor is addressed individually in the above sections. The ’123 Patent further discloses that “[a] factor  $\lambda$  is computed in the gain smoothing calculator 228 based on  $rv$  through the following relation:  $\lambda = 0.5(1 - rv)$ ,” and that a “gain smoothing factor  $S_m$  based on both the voicing and stability is then calculated in gain smoothing

calculator 228 and is given by  $S_m = \lambda \theta$ .” *Id.* at 15:52–55 and 16:33–37.

Next, the ’123 Patent discloses that “[a]n initial modified gain  $g_0$  is computed in gain smoothing calculator 228 by comparing the innovative codebook gain  $g$  to a threshold given by the initial modified gain from the past subframe  $g-1$ .” *Id.* at 16:45–48. The patent illustrates this comparison through use of the following table from Column 16:

	if $g < g - 1$ then	$g_0 = g * 1.19$	bounded by $g_0 \leq g - 1$
and	if $g \geq g - 1$ then	$g_0 = g / 1.19$	bounded by $g_0 \geq g - 1$

Using  $S_m$ ,  $g$  and  $g_0$ , “the smoothed fixed codebook gain  $g_s$  is calculated in gain smoothing calculator 228 by  $g_s = S_m * g_0 + (1 - S_m) * g$ . The smoothed gain  $g_s$  is used for scaling the innovative codevector  $ck$  in amplifier 232.” *Id.* at 16:45–48. Again, Defendants cannot argue that the ’123 Patent fails to disclose an algorithm for computing the smoothing gain.

## 6. “means for finding an innovative codevector”

Defendants contend that the term “means for finding an innovative codevector in an innovative codebook in relation to an index  $k$  of said innovative codebook” is indefinite under § 112(6). However, the ’123 Patent discloses a means for “finding an innovative codevector” through use of the innovative codebook 218 and index  $k$ . On the encoder-side, “the innovative codebook search is performed in module 110 by means of an algebraic codebook.” *Id.* at 14:28–35. “Once the optimum excitation codevector  $ck$  and its gain  $g$  are chosen by module 110, the codebook index  $k$  and gain  $g$  are encoded” and then “transmitted through a communication channel” to the decoder. *See id.* at 14:36–41. The disputed term involves finding that codevector on the decoder-side using the transmitted codebook index. In that regard, the ’123 Patent states that “[t]he innovative codebook 218 is **responsive to the index  $k$**  to produce the innovation codevector  $ck$ .” *Id.* at 15:3–5 (emphasis added).

The '123 Patent references several patents that describe the process of finding the codevector in the codebook. *See id.* at 15:5–9 (stating that “[i]n the preferred embodiment, an innovative codebook 218 as described in the above mentioned U.S. Pat. Nos. 5,444,816; 5,699,482; 5,754,976; and 5,701,392 is used to represent the innovative codevector ck”). For example, U.S. Patent No. 5,444,816 states that “[t]he codebook is a virtual (i.e. not actually stored) collection of L-sample-long waveforms (codeword) ***indexed by an integer k***. The index k ranges from 0 to NC-1 where NC is the size of the codebook.” Ex. J at 5:13–21 (emphasis added). Accordingly, the structure for the “means for finding an innovative codevector” would be the innovative codebook 218 described in the '123 Patent, indexed by the value k.<sup>2</sup>

#### 7. “means for calculating an energy of the pitch prediction error”

Defendants argue that the term “means for calculating an energy of the corresponding pitch prediction error” is indefinite under § 112(6). However, as with all of the other terms, the corresponding patent discloses a computer-implemented algorithm for “calculating an energy of the corresponding pitch prediction error.” The '521 Patent states that “[t]he pitch search consists of finding the best pitch lag T and gain b that minimize the mean squared weighted error E between the target vector x and the scaled filtered past excitation. Error E being expressed as:  $E = ||x - by_T||^2$  where  $y_T$  is the filtered pitch codebook vector at pitch lag T.” Ex. E at 10:54–60. The '521 Patent reiterates this formula by stating that “[t]o calculate the mean squared pitch prediction error for each vector  $y^{(j)}$ , the value  $y^{(j)}$  is multiplied by the gain b by means of a corresponding amplifier 307<sup>(j)</sup> and the value  $by^{(j)}$  is subtracted from the target vector x by means

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<sup>2</sup> For the generic-version of this term “means for finding a codevector in a codebook in relation to said at least one first wideband signal encoding parameter,” the corresponding structure would likewise be the innovative codebook 218 and the fixed codebook 201, indexed by the corresponding encoding parameter.

of a corresponding subtractor 308<sup>(i)</sup>. Selector 309 selects the frequency shaping filter 305<sup>(i)</sup> which minimizes the mean squared pitch prediction error  $e^{(j)} = \|x - b^{(j)}y^{(j)}\|^2$ ,  $j=1, 2, \dots, k$ .” *Id.* at 12:26–35. Defendants cannot legitimately claim that this term is indefinite under § 112(6).

#### **8. “means for amplifying the found codevector with said smoothing gain”**

Defendants also allege that the term “means for amplifying the found codevector with said smoothing gain to thereby produce said gain-smoothed codevector” from the ’123 Patent is indefinite. However, the ’123 Patent states: “[f]inally, the smoothed fixed codebook gain  $g_s$  is calculated in gain smoothing calculator 228 . . . The smoothed gain  $g_s$  is then used for scaling the innovative codevector  $c_k$  in amplifier 232.” Ex. D at 16:62–67 and Fig. 2. The ’123 Patent discloses implementing amplifiers on computers through the mathematical operation of multiplication. For example, the ’123 Patent states that “[t]o calculate the mean squared pitch prediction error for each vector  $y^{(j)}$ , *the value  $y^{(j)}$  is multiplied by the gain  $b$  by means of a corresponding amplifier* 307<sup>(i)</sup> and the value  $by^{(j)}$  is subtracted from the target vector  $x$  by means of a corresponding subtractor 308<sup>(i)</sup>.” *Id.* at 13:32–37. Similarly, the ’123 Patent states that “[t]he generated scaled codevector  $gc_k$  *at the output of the amplifier* 224 is processed through an innovation filter 205.” *Id.* at 15:10–11. A person of ordinary skill in the art would readily understand that the equation “ $gc_k$ ” refers to the gain  $g$  multiplied by the codevector  $c_k$ . *See* Decl. ¶¶ 104–107. Thus, the ’123 Patent discloses implementing amplifier 232 by multiplying the found codevector  $c_k$  with the smoothing gain  $g_s$ , which is represented by the equation  $g_sc_k$ . As a result, defendants cannot legitimately argue that this term is indefinite under § 112(6).

#### **9. Nine terms recite the corresponding algorithm in the claim language.**

As reflected in Appendix 1, nine of the twenty-one terms recite the corresponding algorithm in the claim term itself. Although a claim phrase that uses the word “means” is presumed

to be governed by § 112(6), “[t]his presumption collapses, however, if the claim itself recites sufficient structure, material, or acts to perform the claimed function.” *Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1368 (Fed. Cir. 2005); *Micro Chem., Inc. v. Great Plains Chem., Co.*, 194 F.3d 1250, 1257 (Fed. Cir. 1999). Because these nine terms recite sufficient structure in the claim itself, St. Lawrence respectfully submits that these nine terms are not subject to § 112(6).

## **B. The Fifteen Terms in Appendix 2**

Despite the fact that none of the 15 terms in Appendix 2 use the phrase “means for,” defendants allege that each of those terms is subject to § 112(6) and indefinite for failure to disclose sufficient structure. As discussed below, defendants fail to rebut the presumption that the terms are *not* subject to § 112(6) and, as with the above terms, fail to establish that any are indefinite.

The importance of “the presence or absence of the word ‘means’” to determine whether § 112(6) applies has been long recognized. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). The failure to use the word “means” creates a rebuttable presumption that § 112(6) does not apply. *Id.* This presumption can be overcome and § 112(6) applies if the challenger demonstrates that the claim term “fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.” *Id.* (citing *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)). Specifically, the standard is whether the words of the claim are “understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.” *Williamson*, 792 F.3d at 1348. This analysis is performed on the limitation as a whole, not a single word of the limitation. *Apotex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003).

The terms at issue do not use the word “means” and all of the terms in this group “include substantial additional language describing the operation of the components at issue and their

interaction with other components.” *Smartflash LLC v. Apple, Inc.*, 6:13-cv-447-JRG-KNM, Dkt. No. 582 (E.D. Tex. Jul. 6, 2015). Therefore, none of the terms in this group are subject to the requirements of § 112(6) and all of these terms should be given their plain and ordinary meaning.

## VI. THE SEVENTEEN REMAINING TERMS FOR CONSTRUCTION

### A. Defendants’ Eight “Specialized Circuit” Constructions<sup>3</sup>

For each of these eight terms, defendants add a requirement that would confine the claim to “a specialized circuit,” even though this vague phrase appears nowhere in the specifications, claim language or prosecution histories. This unreasonably narrow construction is designed by defendants to manufacture a potential non-infringement argument and improperly injects ambiguity into the meaning of the claim terms.

In order to simplify the briefing process, the parties have stipulated to be bound by the Court’s constructions in related Case No. 2:14-cv-1055 for five of these eight terms. In that related case and in this case, both the LG defendants and the ZTE and Motorola defendants have attempted to improperly add the phrase “a specialized circuit” to five “filter” terms. However, as St. Lawrence argued, the patents do not limit a “filter” to “a specialized circuit” and instead clearly disclose *computing* filters in computer implementations. For example, the patents all state that “a linear prediction (LP) *filter* is *computed* and transmitted every frame.” *See, e.g.*, Ex. E at 1:50–51. Similarly, “LP parameters *representing the LP synthesis filter* are usually *computed* once every frame.” *See id.* at 6:19–21. “A novel solution to this problem is . . . to introduce the preemphasis filter 103 at the input, *compute the LP filter*  $A(z)$  based on the preemphasized speech signal  $s(n)$ , and use a *modified filter*  $W(z)$  *by fixing its denominator*.” *See id.* at 9:6–10. “The

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<sup>3</sup> Due to the excessive number of terms proposed for construction, St. Lawrence has identified the 8 corresponding claim terms in Appendix 3.



enhanced signal  $c_f$  is therefore ***computed by filtering*** the scaled innovative codevector  $g_{c_k}$  through the innovation filter 205 ( $F(z)$ ).” Ex. A at 15:48–50. As a result, the filters are mathematical algorithms that can be performed on any computer and should not be confined to “specialized” circuits. Similarly, the two “combiner” terms and the “signal injection” term at issue here simply refer to adding/subtracting digital data in the digital domain and should not be limited to only “specialized” circuits for this task.

The patents describe performing the compression and decompression algorithms in the ***digital*** domain. See Ex. D at 1:24–33 (noting that “[a] speech encoder converts a speech signal into a digital bit stream which is transmitted over a communication channel (or stored in a storage medium)” and that the speech decoder “processes the transmitted or stored bit stream to convert it back to a sound signal”). While in this digital domain, digital data is combined through the process of addition/subtraction. For example, the ’802 Patent recites a “combiner circuit for combining said pitch codevector and said innovative codevector ***to thereby produce an excitation signal.***” Ex. C at 20:1–3 (emphasis added). In this regard, the ’802 Patent states that “ $u$  is the excitation signal  $u$  given at the ***output of the adder 219*** by  $u = g_{c_k} + b v_T$ .” *Id.* at 16:16–19 (emphasis added).

Similarly, the ’521 Patent recites a “combiner circuit for combining the amplified convolved pitch codevector with the pitch search target vector to thereby produce the pitch prediction error.” Ex. E at 19:7–9. In this regard, the ’521 Patent states that “[t]o calculate the mean squared pitch prediction error for each vector  $y^{(j)}$ , the value  $y^{(j)}$  is multiplied by the gain  $b$  by means of a corresponding amplifier 307<sup>(j)</sup> and the value  $b y^{(j)}$  is ***subtracted from the target vector  $x$  by means of a corresponding subtractor 308<sup>(j)</sup>.***” *Id.* at 12:26–35.

For the “signal injection” term, the ’802 Patent recites a “signal injection circuit for injecting said spectrally-shaped noise sequence in said over-sampled synthesized signal version to

thereby produce said full-spectrum synthesized wideband signal.” Ex. C at 20:19–22. In this regard, the ’802 Patent recites adding the shaped noise sequence to the over-sampled synthesized speech signal in “adder 221” to recover a full-spectrum signal. *Id.* at 19:36–43. Importantly, none of the patents restrict these addition/subtraction algorithms to a “specialized circuit,” as argued by the defendants, and the computer algorithms can be performed by any adder/subtractor operating in the digital domain, regardless of whether that adder/subtractor is integrated into a processor’s algorithmic logic unit or implemented as a separate computer block.

Additionally, because the phrase “a specialized circuit” has no foundation in the intrinsic record, the patents would not provide any guidance to the Jury as to the meaning of this added phrase. For example, it is entirely unclear what characteristics are necessary for a typical circuit to qualify as a “specialized” circuit, and the Jury would have no meaningful guidance for making that arbitrary distinction. Moreover, the portions of defendants’ constructions that follow “specialized circuit” largely just rephrase the claim language or repeat and reorder the terms used in the claim itself. As a result, defendants’ construction efforts are “nothing more than a rephrasing of the claim language, not an explanation or definition of it,” and the plain and ordinary meaning of these terms should be applied instead. *See, e.g., Western Union Co. v. Moneygram Int’l, Inc.*, A-07-CA-372, 2008 WL 5731946, \*11 (W.D. Tex. Nov. 6, 2008).

#### **B. “device”**

<b>Claim Term/Patent</b>	<b>St. Lawrence’s Proposal</b>	<b>Defendants’ Proposal</b>
“device” various claims	No construction is necessary. The meaning of the term or phrase, as used in the context of the claims, is well understood.	A single discrete conventional electronic part

The term “device” is commonly used and would have been well known to a person of ordinary skill in the art. Defendants’ proposed construction is not supported by the specification and is replete with issues that will confuse the jury. Specifically, the words “single discrete

conventional electronic part,” individually or in that combination, appear nowhere in the specification. Moreover, determining what constitutes a “conventional electronic part” or what is a “single discrete” part will inject unnecessary confusion into the claims where none exists. The Court “need not construe terms under such circumstances, and attempting to do so here would likely obfuscate rather than clarify the scope of the claims.” *Motorola Mobility, Inc. v. Tivo, Inc.*, 2012 WL 6087792, \*30, Civ. No. 5:11-cv-53 (E.D. Tex. Dec. 6, 2012) (Gilstrap, J.).<sup>4</sup>

Moreover, the term “device” appears *dozens* of times throughout the claims of the asserted patents. For example, the patents recite a “pitch analysis device,” a “pitch codebook search device,” a “pitch prediction error calculating device,” an “innovative codebook search device,” a “signal forming device,” a “signal fragmenting device,” a “signal synthesis device,” a “high-frequency content recovering device,” a “gain-smoothed codevector producing device,” and the list goes on. Defendants’ attempt to construe the term “device” in isolation ignores the fact that the surrounding claim language “already provides substantial guidance as to the meaning of the claim terms.” *Uniloc USA, Inc. v. Inmage Corp.*, Case No. 6:12-cv-93, 2013 WL 3871360, at \*4 (E.D. Tex. Jul. 24, 2013). As a result, “the plain and ordinary meaning of the claim language controls” and no construction of the term “device” is necessary. *Id.*

**C. “[synthesized] [weighted] wideband [speech] signal”**

<b>Claim Term</b>	<b>St. Lawrence’s Proposal</b>	<b>Defendants’ Proposal</b>
“[synthesized] [weighted] wideband [speech] signal”	No construction is necessary. The meaning of the term or phrase, as used in the context of the claims, is well understood.	a [synthesized] [weighted] signal containing [speech] information at least in the frequency range of 50-7000Hz

The term “wideband signal” has been well-known and commonly-used by those of

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<sup>4</sup> In fact, in *Tivo*, Motorola took the position that a similar “device” term needed no construction because among other things, “the language of [the limitation at issue] was self-explanatory.” *Id.* at \*28.

ordinary skill in the art for years and need not be construed. When the patent applications were filed, the term “wideband signal” commonly appeared in technical publications<sup>5</sup> and patents.<sup>6</sup> The asserted patents themselves also recognize that the term-of-art was in common usage by noting the demand for “efficient digital wideband speech/audio encoding techniques.” Ex. A, at 1:12–17. The term “wideband” stands in contrast to the term-of-art “narrowband,” which refers to traditional telephone applications that filtered in the range of 200–3,400 Hz. *Id.* at 1:17–19.

In fact, the “WB” in the AMR-WB standard at issue in this case stands for “wideband,” and this term is used throughout the specification. Defendants cannot validly argue that this term needs further construction given that manufacturers and engineers—including defendants’ engineers—routinely implement the AMR *wideband* standard without requiring any specific definition. Because the term has a “widely accepted meaning” no construction is necessary and the term should be given its plain and ordinary meaning. *See Phillips*, 415 F.3d at 1314.

Defendants’ construction is improper for at least three reasons: (1) a wideband signal is not strictly limited to the range of 50–7000 Hz and the patents disclose wideband signals ranges both higher and lower than 7000 Hz; (2) defendants seek to apply the same 50–7000 Hz range to *all* variations of the wideband claim term—including “synthesized wideband signal” and “weighted

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<sup>5</sup> *See e.g.*, P. Mermelstein, “G.722, A new CCITT Coding Standard for Digital Transmission of Wideband Audio Signals,” *IEEE Comm. Mag.*, Vol. 26, No. 1, pp. 8-15, Jan. 1988 (describing a standard applicable to wideband signals and discussing the frequency range of wideband audio signals compared to narrowband audio signals) (attached as Ex. G); Fuemmeler et. al, “Techniques for the Regeneration of Wideband Speech from Narrowband Speech,” *EURASIP Journal on Applied Signal Processing* 2001:0, 1-9 (Sep. 2001) (noting that some work has already been done in the area of wideband speech regeneration) (attached as Ex. H); C.H. Ritz et. al., “Lossless Wideband Speech Coding,” 10<sup>th</sup> Australian Int’l. Conference on Speech Science & Technology, p. 249 (Dec. 2004) (noting that wideband speech refers to speech sampled at 16 kHz and acknowledging existing research into wideband speech coding) (attached as Ex. I).

<sup>6</sup> *See, e.g.*, U.S. 5,581,652, filed Sep. 29, 1993 (titled: “Reconstruction of wideband speech from narrow band speech using codebooks”) (Ex. K); U.S. 6,615,169, filed Oct. 18, 2000 (titled: “High frequency enhancement layer coding in wideband speech codec”) (Ex. L).

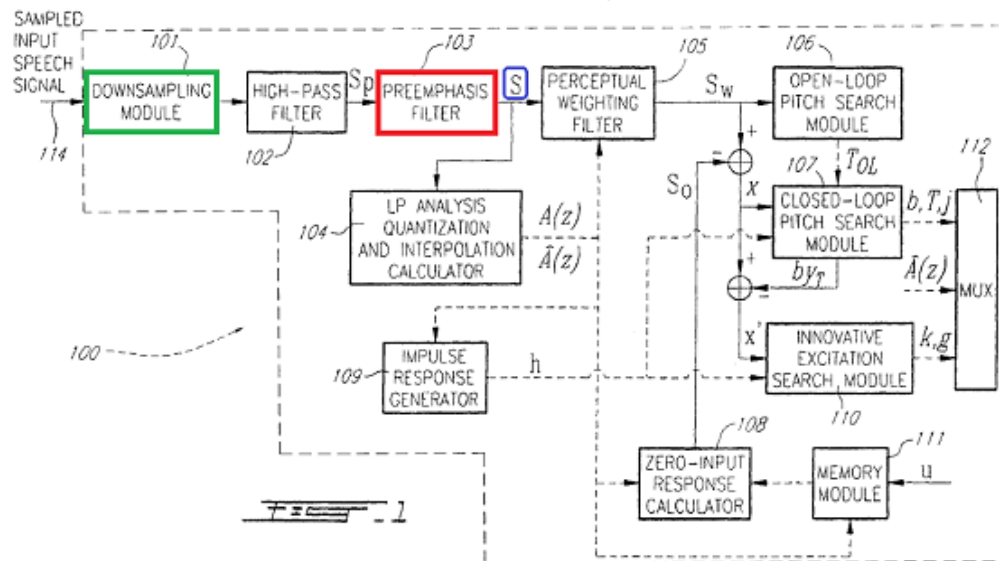
wideband signal”—without regard to the context of the claims or the disclosed embodiments; and (3) the use of the term “information” renders the construction ambiguous.

A wideband signal is not *strictly* limited to the range of 50–7,000 Hz. For example, the '805 Patent discloses generating a noise signal in “the frequency range 5.6–7.2 kHz” that is then added to the synthesized speech signal to form the wideband speech signal at the output. Ex. A at 17:64-18:4. As a result, the outputted wideband signal would include frequencies in the range of 7.0–7.2 kHz (7,000–7,200 Hz). This is also reflected in the claims of the '802 Patent, which recite: “[a] decoder for producing a synthesized wideband signal as defined in claim 3, wherein said band-pass filter comprises a frequency bandwidth located between 5.6 kHz and 7.2 kHz.” *See, e.g.*, Ex. C, at 21:10–13. Indeed, defendants’ construction acknowledges that a wideband signal can include frequency content *greater* than 7,000 Hz and that this number is not an absolute cut-off.

However, it is also the case that 7,000 Hz is not an absolute cut-off going in the downward direction. For example, the '802 Patent describes an embodiment where the “input wideband signal is down-sampled from 16 kHz to around 12.8 kHz.” *Id.* at 2:48–49 and claim 1 (“a wideband signal *previously down-sampled* during encoding”). “This reduces the number of samples in a frame, the processing time *and the signal bandwidth below 7000 Hz.*” *Id.* at 2:49–51 (emphasis added). This is due to a mathematical principle called the Sampling Theorem, which is well understood by persons of ordinary skill in the art. Under the Sampling Theorem, the highest frequency component in a signal is equal to half of the sampling rate. For example, if a signal is sampled 8,000 times per second (or at 8 kHz), the maximum frequency component of that signal is 4 kHz. If the signal is sampled 16,000 times per second (or at 16 kHz), the maximum frequency component is 8 kHz. For the down-sampled signal discussed in the '802 Patent, because the wideband signal is down-sampled “from 16 kHz to around 12.8 kHz,” the *maximum* frequency

component of that signal would be around 6.4 kHz or 6,400 Hz.

In fact, defendants' construction would read out any embodiment where the signal is down-sampled to a rate less than 14,000 times per second (or at 14 kHz), which under the Sampling Theorem would correspond to a maximum frequency of 7,000 Hz. Because defendants' construction would require a wideband signal to have information "at least" up to 7,000 Hz, any signal that is sampled less than 14,000 times per second would not be a wideband signal. This is directly contradicted by the asserted patents. As quoted above, the '802 Patent recites "a wideband signal *previously down-sampled* during encoding." *Id.* at 19:58–59. However, defendants' construction would read out the preferred embodiment, which down-samples "from 16 kHz to around 12.8 kHz." *Id.* at 2:48–49. Similarly, defendants' construction would read out the "preferred embodiment of a *wideband* encoding device" illustrated in Figure 1 and shown below:



As discussed previously with respect to the "preemphasis filter" term, the output of the "preemphasis filter" (shown in red) is the signal "S" (shown in blue), which the '524 Patent defines as the "*wideband signal* input speech vector (*after down-sampling*, pre-processing, and preemphasis)." *Id.* at 7:2–3. In contradiction to defendants' construction, however, the '524 Patent

discloses that in “downsampling module 101” (shown in green) the signal is down-sampled “from 16 kHz down to 12.8 kHz,” which would correspond to a maximum frequency of 6,400 Hz. *Id.* at 7:45–48. As a result, the preferred embodiment shown in Figure 1 discloses a wideband speech signal with a frequency range less than 7,000 Hz.

Defendants also improperly seek to apply the same 50–7,000 Hz range to *all* variations of the wideband claim term—including the terms “synthesized wideband signal” and “weighted wideband signal”—without regard to the context of the claims or the disclosed embodiments. For example, claim 1 of the ’802 Patent discloses “filtering said excitation signal in relation to said linear prediction filter coefficients *to thereby produce a synthesized wideband signal.*” Ex. C at 20:5–7. The claim then recites “an oversampler responsive to said synthesized wideband signal *for producing an over-sampled signal version of the synthesized wideband signal.*” *Id.* at 20:7–10. As stated in the ’802 Patent, in the preferred embodiment, “oversampling converts from the 12.8 kHz sampling rate to the original 16 kHz sampling rate.” *Id.* at 17:51–52. As a result, in a preferred embodiment of claim 1, the “synthesized wideband signal” has a maximum frequency content of 6,400 Hz (6.4 kHz) under the Sampling Theorem described above due to it being previously down-sampled to a rate of 12,800 samples per second. This synthesized wideband signal is then “oversampled” back to 16,000 samples per second to produce the “over-sampled signal version of the synthesized wideband signal” recited in claim 1.

Similarly, for the term “weighted wideband signal,” claim 8 of the ’524 Patent recites a “method for producing a perceptually weighted signal in response to a wideband speech signal in order to reduce a difference between the weighted wideband speech signal and a subsequently synthesized weighted wideband speech signal.” Ex. B at 19:5–9. However, the preferred embodiment of Figure 1 places the “perceptual weighting filter 105” *after* the “downsampling

module 101.” *See id.* at Fig. 1. As a result, the weighted wideband signal in the preferred embodiment was previously down-sampled “from 16 kHz down to 12.8 kHz,” corresponding to a maximum frequency of 6,400 Hz under the Sampling Theorem described above. *Id.* at 7:47–48.

Additionally, defendants’ construction is ambiguous in that it requires a signal “containing information” in a particular frequency range. However, it is unclear whether speech, noise, or both are considered “information.” Moreover, the harmonic structure in a wideband signal may only exist up to a certain frequency depending on the speech segment and may not cover the entire spectrum. Ex. A, at 11:37-41. Accordingly, it is not clear what portions of the spectrum would be deemed to “contain information.” The Court should reject defendants’ construction and give the widely-known term-of-art “wideband signal” its plain and ordinary meaning. *See* Decl. ¶¶ 22-27.

**D. “signal path” / “signal paths”**

<b>Claim Term/Patent</b>	<b>St. Lawrence’s Proposal</b>	<b>Defendants’ Proposal</b>
“signal path” / “signal paths” ’521 Patent: claims 1, 2, 5-8, 10	No construction is necessary. The meaning of the term or phrase, as used in the context of the claims, is well understood.	“a route for the transmission of an electrical data between two or more points”

Defendants propose an unnecessarily narrow construction to presumably create a non-infringement position where none exists.<sup>7</sup> The term “signal path” is widely used and understood by those of ordinary skill in the art and the Court need not construe it. Indeed, the term “signal path” appears verbatim in the AMR-WB standard’s technical specification, which emphasizes that a person of ordinary skill in the art would readily understand its meaning. *See* Ex. M at 25. Additionally, the term is given added meaning by the surrounding claim language. For example,

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<sup>7</sup> The very same argument was made by defendants in Germany and rejected by the German court which concluded that “the wording of the claim does not restrict [the] ‘signal path’ to a physical signal path in such a way that it has to be an electronic hardware component and thus a software implementation (in accordance with the standard) is not sufficient.” (Ex. F at 19).



claim 1 of the '521 Patent specifies that the signal paths are “associated to respective sets of pitch codebook parameters representative of said digitized input data.” Ex. E at 18:31–33. Because “the claim language already provides substantial guidance as to the meaning of” the disputed term, no construction of “signal path” is necessary. *Uniloc USA, Inc. v. Imagine Corp.*, No. 6:12-cv–93, 2013 WL 3871360, at \*4 (E.D. Tex. July 24, 2013) (Davis, J.).

Defendants’ proposed construction uses language that appears *nowhere* in the specification or prosecution history. Rather than clarify the meaning of the term “signal path” for the jury, defendants’ addition of the terms “route for the transmission of an electrical data” and “two or more points” injects confusion and should be rejected. Specifically, it is unclear what constitutes “electrical data,” a “route” and/or “two or more points.” In fact, because the term “signal path” appears verbatim in the AMR-WB standard’s technical specification, adopting defendants’ construction would unnecessarily complicate the Jury’s role in evaluating the merits of this case and increase the risk of confusion. *See* Decl. ¶¶ 28–34.

**E. “low frequency portion”**

<b>Claim Term/Patent</b>	<b>St. Lawrence’s Proposal</b>	<b>Def.’s Proposal</b>
“low frequency portion” '805 Patent: claim 1	No construction is necessary. The meaning of the term or phrase, as used in the context of the claims, is well understood.	Indefinite.

In context, the claims of the '805 Patent recite an “innovation filter for filtering the innovative codevector in relation to said periodicity factor *to thereby reduce energy of a low frequency portion* of the innovative codevector *and enhance periodicity of a low frequency portion* of the excitation signal.” As explained below, the term “low frequency portion” is part of a “whereby clause” that does not actually limit the claims in which it appears.

Surplus language may exist in some claims. *Innovative Display Tech., LLC v. Acer, Inc.*, Civ. No. 2:13-cv-522 Dkt. No. 101, 2014 WL 4230037, \*28 (E.D. Tex, Aug. 26, 2014) (Payne,

J.), objections overruled, Dkt. No. 219 (Dec. 15, 2014) (Gilstrap, J.) (citing *Decisioning.com, Inc. v. Federated Dep't Stores, Inc.*, 527 F.3d 1300, 1312 n.6 (Fed. Cir. 2008)). In particular, a “whereby” clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim. *Id.* (citing *Tex. Instruments Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1172 (Fed. Cir. 1993)).

In *Innovative Display*, the limitation at issue recited “sheet or substrate overlying at least a portion of one of the sides of the panel member to change the output distribution of the emitted light *such that the light will pass through a liquid crystal display with low loss.*” This Court noted that the disputed portion of the limitation was “analogous to a whereby clause and [did] not limit the claims in which it appears” and rejected defendant’s indefiniteness argument. *Id.*

For the same reasons, the “low frequency portion” term is not a claim limitation and need not be construed. The term at issue appears in the following limitation:

an innovation filter for filtering the innovative codevector in relation to said periodicity factor *to thereby* reduce energy of a low frequency portion of the innovative codevector and enhance periodicity of a low frequency portion of the excitation signal.

Ex. A at 18:23–27 (emphasis added). Accordingly, as in *Innovative Display*, the reduction in the energy and enhancement in periodicity of the low frequency portion of the codevector and excitation signal, respectively, merely state the result of applying the innovation filter and do not limit the claims in which they appear. *See In re Omeprazole Patent Litig.*, 536 F.3d 1361, 1370 (Fed. Cir. 2008) (refusing to read in a limitation where the term “enhanced stability” only referred to the intended result of the invention); *Endo Pharm. Inc. v. Watson Labs., Inc.*, Civ. No. 2:13-cv-192, 2014 WL 2859349, \*4-10 (E.D. Tex. Jun. 23, 2014) (Gilstrap, J.) (concluding that a similar “thereby” clause which merely states an intended result is given no weight and need not be construed); *Vertical Computer Sys., Inc. v. Interwoven, Inc.*, Civ. No. 2:10-cv-490, 2013 WL

5202685, \*11-12 (E.D. Tex. Sep. 16, 2013) (Gilstrap, J.) (holding that the phrase “a first set of executable instructions for creating arbitrary objects . . . said arbitrary objects being objects that *can be created independently by individual preference*” recited a non-limiting whereby clause, which cannot lay predicate to a finding of indefiniteness).

Even if the Court concludes that the “low frequency portion” term limits the claims, defendants have not met their burden of showing by clear and convincing evidence that a person of ordinary skill in the art would not have understood that term with reasonable certainty. The “low frequency portion” term relates to the output of the innovation filter. Accordingly, application of the innovation filters recited in the ’805 Patent’s specification would define the scope of the “low frequency portion” with reasonable certainty. *See, e.g.*, Ex. A at 14:30–38 (reciting “[s]uggested forms for innovation filter 205”). *See* Decl. ¶¶ 35-54.

**F. “high frequency content”**

Claim Term/Patent	St. Lawrence’s Proposal	Def.’s Proposal
“high frequency content” ’524 Patent: claim 1	No construction is necessary. The meaning of the term or phrase, as used in the context of the claims, is well understood.	Indefinite

Functional language can only add a limitation to an apparatus claim if it “describes something about the structure of the apparatus rather than merely listing its intended or preferred uses.” *Textron Innovations Inc. v. Am. Eurocopter Corp.*, 498 F. App’x 23, 28 (Fed. Cir. 2012); In this case, the phrase at issue recites “a signal preemphasis filter . . . *for enhancing* a high frequency content of a wideband speech signal.” Ex. B at 18:29–32. Accordingly, the term “high frequency content” does not impose any structural limitations on the preemphasis filter, and instead recites its intended use. As a result, the term is not a limitation.

To the extent the Court concludes this term is a claim limitation, LG has not met its burden of showing by clear and convincing evidence that one of skill in the art would not understand the

term with reasonable certainty. The “high frequency content” term refers to the output of the preemphasis filter, and the application of the preemphasis filter disclosed in the ’524 Patent would define the scope of the “high frequency portion” with reasonable certainty. *See* Ex. B at 7:66–8:9.

Moreover, a patent examiner is presumed to act from the viewpoint of a person of ordinary skill in the art. *In re Sang Su Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002). Statements by the examiner can inform how a person of ordinary skill in the art would interpret the claims. *Syneron Medical Ltd. v. Viora Ltd.*, Civ. No. 2:14-cv-639, 2015 WL 1952360, \*17 (E.D. Tex. Apr. 9, 2015). When explaining the Reasons for Allowance of claims of the ’802 Patent, the Examiner concluded:

The instant application discloses a device for recovering a **high frequency content** of a wideband signal. Prior art references show similar methods but fail to teach “a signal fragmenting device for receiving an encoded version of a wideband signal previously down-sampled during encoding and extracting from said encoded wideband signal version at least pitch codebook parameters, innovative codebook parameters, and linear prediction filter coefficients.

Notice of Allowance dated August 9, 2006, Ex. Q at 2. Not only did the Examiner understand the scope of the term “high frequency content,” the Examiner reiterated it in the reasons for allowance. As a result, this term is not indefinite. *See* Decl. ¶¶ 97-103.

**G. “said full-spectrum synthesized wideband signal”**

Claim Term/Patent	Saint Lawrence’s Proposal	Defendants’ Proposal
“said full-spectrum synthesized wideband signal” ’802 Patent: claims 1, 9, 25	SLC requests that the Court address the antecedent basis issue by correcting the typo in this term from “said” to “a”	Indefinite

This term does not limit the claims in which it appears because it is a “whereby” clause that merely states the result of the limitations and adds nothing to the substance of the claim. *Tex. Instruments Inc.*, 988 F.2d at 1172. The term at issue appears in the following limitation:

a signal injection circuit for injecting said spectrally-shaped noise sequence in said over-sampled synthesized signal version *to thereby* produce said full-spectrum synthesized wideband signal.

Ex. C at 20:19–22 (emphasis added). Accordingly, the term refers to what is produced by the signal injection circuit – i.e. the resulting output of the signal injection circuit. Therefore, the term is not a limitation. *See In re Omeprazole Patent Litig.*, 536 F.3d at 1370; *Endo Pharm. Inc.* 2014 WL 2859349 at \*4-10; *Vertical Computer Sys.*, 2013 WL 5202685 at \*11-12.

However, to the extent the Court concludes that the term is a limitation, St. Lawrence requests that the Court address defendants’ antecedent-basis complaint by correcting the language from “*said* full-spectrum synthesized wideband signal” to “*a* full-spectrum synthesized wideband signal.” A district court can correct typographical or clerical errors made during prosecution. *See Blackboard, Inc. v. Desire2Learn, Inc.*, Civ. No. 9:06-cv-155, 2007 WL 2255227, \*12 (E.D. Tex. Aug. 3, 2007) (citing *Group One, Ltd. v. Hallmark Cards, Inc.*, 407 F.3d 1297, 1303 (Fed. Cir. 2005)). The Court can correct a patent if “(1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims.” *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1354 (Fed. Cir. 2003). The ’802 Patent is directed to a “[method and device] for recovering a high frequency content of a wideband signal previously down-sampled ... to produce a full-spectrum synthesized wideband signal.” Ex. C at 1:9-14; 3:4-8; 3:17-22. The method includes the step of “injecting the spectrally-shaped noise sequence in the over-sampled synthesized signal version to thereby produce the full-spectrum synthesized wideband signal.” *Id.* at 3:13-16. Similarly, the device includes “a signal injection circuit for injecting the spectrally-shaped noise sequence in the over-sampled synthesized signal version to thereby produce the full-spectrum synthesized wideband signal.” *Id.* at 3:26-29. Remaining portions of the specification also consistently identify a full-spectrum synthesized wideband signal as the output of the signal injection circuit of the high-frequency content recovery device. *Id.* at 4:3-7; 5:36-41.

Consistent with the specification, independent claims 1, 9, and 25 each recite a high-frequency content recovering device comprising a signal injection circuit which produces a full-spectrum synthesized wideband signal by injecting the spectrally-shaped noise sequence in the over-sampled synthesized signal version. The prosecution history does not suggest a different interpretation of the term. Accordingly, as in *Blackboard*, the typographical error is self-evident on the face of the patent, the correction is not subject to reasonable debate based on consideration of the claim language and the specification, and the prosecution history does not suggest a different interpretation of the claims. *See Blackboard*, 2007 WL 2255227 at \*12 (internal citations omitted). Accordingly, St. Lawrence requests a correction by the Court from “said” to “a.”

**H. “a frequency bandwidth generally higher than a frequency bandwidth of [said] over-sampled synthesized signal version”**

Claim Term/Patent	Saint Lawrence’s Proposal	Defendants’ Proposal
“a frequency bandwidth generally higher than a frequency bandwidth of [said] over-sampled synthesized signal version” '802 Patent: claims 3, 49 and 52.	No construction is necessary. The meaning of the term or phrase, as used in the context of the claims, is well understood.	Indefinite

As explained with regard to the previous term, a “whereby” clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim.

*Tex. Instruments Inc.*, 988 F.2d at 1172. Claim 3 of the '802 Patent recites:

a spectral shaper for filtering said scaled white noise sequence in relation to a bandwidth expanded version of the linear prediction filter coefficients ***to produce*** a filtered scaled white noise sequence characterized by a frequency bandwidth generally higher than a frequency bandwidth of said over-sampled synthesized signal version.

Ex. C at 20:35–41 (emphasis added). Thus, the term refers to what is ***produced*** by the spectral shaper disclosed in the '802 Patent, and the term is not a limitation. *See In re Omeprazole*, 536 F.3d at 1370; *Endo Pharm. Inc.* 2014 WL 2859349 at \*4–10.

To the extent the Court concludes this term is a claim limitation, defendants have not met their burden of showing by clear and convincing evidence that one of skill in the art would not understand the scope of the claim with reasonable certainty. The over-sampled synthesized signal ( $\hat{S}$ ) has a “low-pass perception” as it “does not contain the higher frequency components which were lost by the downsampling process” at the encoder. Ex. C at 17:57–61. In order to restore the full band of the original signal (i.e., restore the lost high frequency contents), a high frequency generation procedure is performed. *Id.* at 17:61–63. The “high frequency contents are generated by filling the upper part of the spectrum” with a filtered scaled white noise ( $W_f$ ). *Id.* at 17:65–18:3. Because the filtered scaled white noise is generated to fill the upper part of the spectrum that is missing from the original signal, one of skill in the art would readily understand that the filtered scaled white noise has a “generally higher” bandwidth than the over-sampled synthesized signal.

Moreover, the '802 Patent discloses that the filtered scaled white noise is produced by the spectral shaper “by filtering the noise  $W_g$  through a bandwidth expanded version of the same LP synthesis filter used in the down-sampled domain ( $1/\hat{A}(z/0.8)$ ).” *Id.* at 19:30–34. Given the disclosure of a specific transfer function for producing the filtered scaled white noise, a person of ordinary skill in the art would know what it means for the filtered scaled white noise sequence to be characterized by a frequency bandwidth generally higher than a frequency bandwidth of the over-sampled synthesized signal. Therefore, the term is not indefinite. *See* Decl. ¶¶ 55-69.

**I. “weighting of said wideband speech signal in a formant region is substantially decoupled from a spectral tilt of said wideband speech signal”**

Claim Term/Patent	St. Lawrence’s Proposal	Defendants’ Proposal
“weighting of said wideband speech signal in a formant region is substantially decoupled from a spectral tilt of said wideband speech signal” '524 Patent: claim 1	No construction is necessary. The meaning of the term or phrase, as used in the context of the claims, is well understood.	Indefinite.

As explained with regard to the previous terms, a “whereby” clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim.

*Tex. Instruments Inc.*, 988 F.2d at 1172. The above term appears in the following limitation:

a perceptual weighting filter . . . said perceptual weighting filter having a transfer function with fixed denominator **whereby** weighting of said wideband speech signal in a formant region is substantially decoupled from a spectral tilt of said wideband speech signal.

Ex. B at 18:24–44 (emphasis added). Thus, the term is a whereby clause which refers to the result of applying the perceptual weighting filter disclosed in the ’524 Patent. *See In re Omeprazole*, 536 F.3d at 1370; *Endo Pharm. Inc.* 2014 WL 2859349 at \*4–10.

To the extent the Court concludes this term is a claim limitation, defendants have not met their burden of showing by clear and convincing evidence that one of skill in the art would not understand the scope of the claim with reasonable certainty. It is well accepted that “patentable inventions cannot always be described in terms of exact measurements, symbol and formulae, and the applicant necessarily must use the meager tools provided by language, tools which admittedly lack exactitude and precision.” *Thomas Swan & Co., Ltd., v. Finisar Corp.*, Case No. 2:13-cv-00178 (E.D. Tex. Jun. 25, 2015) (Gilstrap, J.), Dkt. 157 at 53. Accordingly, “words of approximation, such as ‘generally’ and ‘substantially,’ are descriptive terms commonly used in patent claims to avoid a strict numeral boundary to the specified parameter.” *Solocron Media, LLC v. Verizon Comm. Inc.*, Case No. 2:13-cv-1059, 2015 WL 1011310, \*28 (E.D. Tex. Mar. 5, 2015) (Payne, J.) (citing *Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1310–11 (Fed. Cir. 2003)). In fact, the Supreme Court in *Nautilus* recognized that definiteness does not require “absolute precision.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2128–29 (2014). Given the intrinsic evidence, the term “substantially decoupled” informs those skilled in the art with reasonable certainty about the scope of the invention.



Prior art systems minimized the error between the weighted input speech and weighted synthesis speech using a weighting filter that did not have a fixed denominator. *See, e.g.*, Ex. B at 2:31–40 (describing a filter with a transfer function of the form: “ $W(z)=A(z/\gamma_1)/A(z/\gamma_2)$ ”). However, this was unsuitable for wideband applications because of difficulties in modelling the formant structure and the required spectral tilt concurrently. *Id.* at 9:20–31.

The ’524 Patent discloses that a “novel solution to this problem” is to “introduce the pre-emphasis filter 103 at the input, compute the LP filter  $A(z)$  based on the preemphasized speech  $s(n)$ , and use a modified filter  $W(z)$  by fixing its denominator.” *Id.* at 9:32–36. With this solution in mind, the patentees disclosed “a new perceptual weighting filter 105 *with fixed denominator*” given by the relation:  $W(z)=A(z/\gamma_1)/(1-\gamma_2z^{-1})$ . *Id.* at 9:32–36. Importantly, for purposes of the term-at-issue, the ’524 Patent states that “[t]his structure *substantially decouples* the formant weighting from the tilt.” *Id.* at 9:44–45. As a result, a person of ordinary skill in the art would understand from the context of the patent and the disclosure of its “novel solution” what the phrase “substantially decouples” means in the above term.

Additionally, the transfer function for this modified filter  $W(z)$  is set forth in the specification and recited in dependent claim 4.<sup>8</sup> As clearly stated in the above quoted sections of the ’524 Patent, the application of the recited transfer functions results in the substantial decoupling of the wideband speech signal in a formant region from a spectral tilt of said wideband speech signal. *See id.* at 9:37–45. Accordingly, by applying the disclosed transfer function of the perceptual weighting filter, a person of ordinary skill in the art would know with reasonable certainty what it means for the weighting of the wideband speech signal in a formant region to be

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<sup>8</sup> St. Lawrence has asserted dependent claims 4 and 5 but is not asserting independent claim 1. The analysis of independent claim 1 and its corresponding dependent claims is equally applicable to the remaining asserted claims of the ’524 Patent.

substantially decoupled from a spectral tilt of the wideband speech signal.

Moreover, a patent examiner is presumed to act from the viewpoint of a person of ordinary skill in the art. *In re Sang Su Lee*, 277 F.3d at 1345. Statements by the examiner can inform how a person of ordinary skill in the art would interpret the claims. *Syneron Medical* 2015 WL 1952360, \*17. With regard to allowing the claims of the '524 Patent, the Examiner concluded:

The combination of Kroon et al and Oshikiri et al fail to specifically disclose or fairly suggest a pre-emphasis filter for producing pre-emphasized speech which is used to calculate LP coefficients that are further utilized with a perceptual weighting filter, having a fixed denominator, to compensate for spectral tilt in a wideband speech signal.

Notice of Allowance dated April 14, 2004, Ex. P at 7. Accordingly, applying the perspective of a person of ordinary skill in the art, not only did the examiner understand the scope of the “substantially decoupled” term, he reiterated it in his reasons for allowance.

Additionally, defendants (and many other cell phone manufacturers) have adopted the AMR-WB standard. The technical specifications for AMR-WB uses the very same phrase when describing the perceptual weighing filter. Ex. M at 21 (“This structure substantially decouples the formant weighting from the tilt”). This provides further evidence that one of skill in the art would understand the scope of “substantially decoupled” with reasonable certainty.

Because the specification conveys sufficient context such that a person of ordinary skill in the art would understand the patentees’ use of the phrase “substantially decouples” with reasonable certainty, the term is not indefinite. *See* Decl. ¶¶ 70-91.

**J. “reduce a difference between the wideband speech signal and a subsequently synthesized wideband speech signal”**

Claim Term/Patent	St. Lawrence’s Proposal	Def.’s Proposal
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“reduce a difference between the wideband speech signal and a subsequently synthesized wideband speech signal” '524 Patent: claims 1, 8	No construction is necessary. The meaning of the term or phrase, as used in the context of the claims, is well understood.	Indefinite
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As with the above terms, defendants’ complaint centers on a “whereby” clause that does not limit the claims. The above term appears in the preambles of claims 1 and 8:

A perceptual weighting device for producing a perceptually weighted signal in response to a wideband speech signal *in order to reduce a difference* between the wideband speech signal and a subsequently synthesized wideband signal.

*See, e.g.*, Ex. B at 18:24–28 (emphasis added). Thus, the term is a whereby clause which refers to the intended result of applying the perceptual weighting device disclosed in the '524 Patent. *See In re Omeprazole*, 536 F.3d at 1370; *Endo Pharm. Inc.* 2014 WL 2859349 at \*4–10. The asserted patents are generally directed toward improving quality by reducing the differences between the input speech at the encoder and the synthesized output speech produced at the decoder. *See* Decl. ¶¶ 92-96. Given the excessive number of claim terms that the defendants have proposed for construction and the fact that the defendants carry the burden of establishing indefiniteness, St. Lawrence respectfully reserves its right to rebut any indefiniteness argument in its Reply Brief.

## VII. CONCLUSION

St. Lawrence respectfully requests that the Court adopt its claim construction positions. With respect to the 42 terms that defendants allege are indefinite, defendants cannot meet their burden of showing indefiniteness with clear and convincing evidence. For the remaining 11 terms, St. Lawrence respectfully submits that no construction is necessary.

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Respectfully submitted,

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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that all counsel of record who are deemed to have consented to electronic service are being served with a copy of this document via the Court's CM/ECF system per Local Rule CV-5(a)(3) on November 30, 2015.

/s/Michael McBride

Michael McBride